CHAPTER 5

PROJECTIONS OF RETIREMENT DECISION

I. OVERVIEW

For nearly eight percent of the MINT sample, administrative data provide information on timing of first receipt of old-age and survivor benefits from Social Security.[1] For the remainder of the MINT population, a statistical model assigns timing of Social Security benefit receipt. This model combines both stochastic (equation-based) and deterministic (rule-based) functions. The deterministic functions mandate benefit receipt for low-earning widows and widowers who are widowed at or before age 60 or 61.[2] For those in the population who are not low-earning widowers thus defined, logistic equations determine each individual's probability of receiving Social Security at each age *t* between 62 and 67 given that he/she did not receive benefits at age *t-1*. The logistic equations are reduced-form rather than structural in nature. That is, instead of directly relying on rules about optimizing behavior near retirement, they capture the existing relationship between an individual's benefit receipt timing and aspects of his/her life trajectory (e.g., educational, marital, and earnings history) and fixed characteristics (e.g., sex).[3] The equations were estimated from Survey of Income and Program Participation (SIPP) data matched to Summary Earnings Records (SER) and the Social Security Administration's Master Beneficiary Record (MBR). The SIPP panels used for estimation included 1990 through 1993.

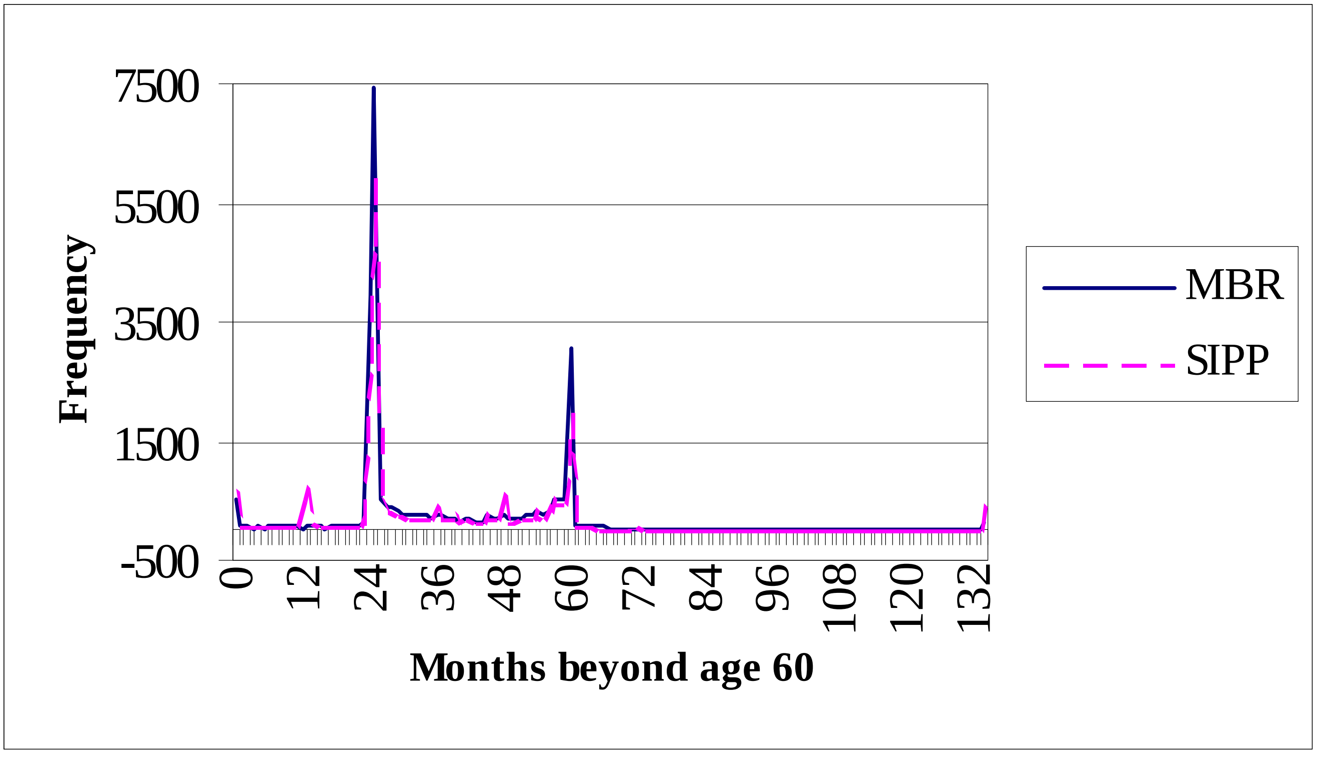
II. TIMING OF RECEIPT OF SOCIAL SECURITY RETIREMENT BENEFITS

1. Estimation Strategy

We estimated separate logistic equations for three groups--married males, married females, and unmarried males and unmarried females pooled together.[4] We screened individuals in the sample for receipt of Social Security disabled worker benefits based on the payment dates that the Master Beneficiary file reports, and excluded any individuals who had, to date, received disabled worker benefits from the population. Such cases made up just over five percent of the total number of person-year observations. Sample sizes for nondisabled members of the three final estimation groups were as follows: 2,808 person years at risk for currently married men; 2,283 person years at risk for currently married women; and 2,147 person years at risk for men and women who were not currently married.

To estimate the equations, we examined SIPP participants late in the year of each single year of age from age 62 onward to see if they had, according to MBR data, begun to receive Social Security benefits in that year.[5] Figure 5-1, based on SIPP and MBR data, shows patterns

Figure 5-1
Month of First Benefit Entitlement,
Where First Entitlement is Age 60 or Above,
Using SIPP and MBR Birthdates



Source: Urban Institute tabulation from 1990-1993 SIPP matched to the 1990-1993 MBR (462 cases unmatched)
Sample: Individuals who, according to SIPP birthdate, reach any age between 61 and 70 at any point during the life of the panel
MBR N=26,867 (7,768 cases missing, 283 cases with invalid dates of first receipt, 2,827 early recipients)
SIPP N=24,040 (10,221 cases missing, 0 cases with invalid dates of first receipt, 3,946 early recipients)

of Social Security receipt for persons in the estimation data. The figure reveals that Social Security benefit receipt is highly clustered around one's birth date at ages 62 (24 months beyond age 60) and 65 (60 months beyond age 60). (The figure also illustrates an important measurement issue that both endnote one and Appendix A discuss.) Because the unit of analysis is a person-year, a single person could be represented in the estimation file more than once (to a maximum of four times, in the 1991 panel which tracked some households for up to 40 months). About 88 percent of the person-year observations from SIPP were matched to an earnings record. Those observations for which a match was not obtained were then dropped from the sample. Also excluded were those individuals who took up their Social Security benefits at age 60 or 61, given that they are, as described above, excluded from the stochastic determination process.

To replicate the actual benefit application process as closely as possible, we attempted to screen the sample for eligibility for Social Security retirement benefits, based on SER information on both one's own and one's current spouse's OASDI coverage history and any other evidence of Social Security benefit eligibility. We abandoned this effort for three reasons. First, exactly defining the Social Security-eligible population based on the SIPP-match files was not possible, because not all former spouses of members of the sample can be observed. Second, the crude eligibility screen greatly diminished sample sizes. Third, eliminating the screen did not cause major changes to parameter estimates.[6]

Most determinants in the descriptive prediction equations are contemporaneous, although in some cases we used lagged values. Explanatory variables within each group include age (coded as single-year dummies), education (coded categorically), and measures of earnings, income, and wealth, all of which are expressed in relation to the average national wage. Earnings measures include covered earnings at year t-1,[7] average covered earnings in younger working years (ages 35 to 55), and recent covered earnings (from ages 56 to 61). Whether one is covered by either a defined benefit (DB) pension or a defined contribution (DC) retirement account (e.g., an IRA, Keogh, or 401(k) plan) is another determinant in the equations.[8] Other wealth measures in the model include family net worth less home value and home equity, sometimes coded as a dummy variable indicating whether this is greater than zero and other times the actual value. Preliminary estimates considered asset income, but the direct wealth measures just described are more consistent with the estimates in Chapter Four. An indicator of race-ethnicity, specifically a dummy variable for non-Hispanic whites versus others, is also included in the models.

For individuals who were married in the month of potential Social Security receipt, additional variables in the logistic equations describe the spouse's characteristics, including his/her age, earnings history, education, and wealth, including pension coverage. The spouses of members of the estimation sample were born as early as 1908 and as late as 1970. As a result, a spouse's earnings could always be examined at t-1, but information was not always available on her/his average earnings from the ages 35 to 55. Where spouses were too old to have reported earnings from this age range, we used their earnings from the years 1951 to 1971 as a proxy. Where spouses were too young, we took their 20 most recent years of earnings (through 1996).

Preliminary regressions suggested that several additional variables are good predictors of the timing of receipt of Social Security benefits. These include the duration of one's most recent work spell (i.e., how long it has been since one had a zero earnings year) and one's total number of years in the labor force, both of which can be considered measures of attachment to the labor force and perhaps "taste" for work. We have not included these in the current MINT model because the approach for forecasting earnings trajectories in MINT that Chapter Two describes, while effective at generating AIMEs, is not particularly effective at generating realistic patterns of spells of work/not work in employment histories. This choice may be worthy of re-consideration at some future point in MINT's development.

2. Coefficient Estimates

Table 5-1 reports the logistic estimates for the final models for the three separate groups, including the standard errors and significance levels for each coefficient. Coefficients from the equations can be interpreted as the effects of each variable on the *log-odds* of taking up Social Security benefits at age t given non-receipt at age t-1.

The results in Table 5-1 suggest that across all three of these groups, age, earnings, and race-ethnicity are consistently strong predictors of timing of Social Security benefit receipt. Age has non-linear effects on the probability of receipt, with individuals generally more likely to retire at ages 62 and 65 than at 63, 64, and older ages, all else being equal. Both social norms and incentives (e.g., eligibility for Medicare at age 65) contribute to this pattern. While earnings between ages 35 and 55 and between ages 56 and 61 are both positively associated with the likelihood of benefit receipt (i.e., the higher the average earnings, the greater the likelihood of collecting Social Security) for nearly all groups, earnings at t-1 are negatively associated with receipt. This pattern is sensible, since those with higher lifetime earnings have greater resources from which to draw, making a comfortable retirement more likely, yet those continuing to work beyond age sixty both demonstrate higher current earning ability and have already exhibited that they are less likely to retire for some unobservable reason (perhaps a "taste" for work, as described above). For all three groups, those persons who are non-Hispanic whites begin benefit receipt at a significantly faster rate than those who are not (i.e., Hispanic whites and nonwhites), other factors being equal.

In these estimates, whether one is covered by a pension has differing effects on Social Security benefit take-up across the groups. Pensions represent resources from which a person can draw in retirement, but they also might suggest characteristics of one's employer. While pension coverage serves to accelerate married men's retirement timing, it serves to decelerate married women's retirement timing. For married women, a spouse's pension coverage, does, however, increase the probability of starting Social Security receipt, though not significantly. For single people, pension coverage does has a positive coefficient (implying that coverage makes Social Security retirement more likely), though the relationship with benefit take-up is not statistically significant at the .05 level.

Table 5-1
Logistic Regression Coefficients Currently Employed in MINT: Social Security Benefit Receipt Timing

Variable	Parameter Estimate (Standard Error)		
	Married Men (N=2808)	Married Women (N=2283)	Unmarried People (N=2147)
Intercept	-2.3859** (0.5465)	-2.2842** (0.7561)	-0.5755** (0.1601)
Age 63	-1.1243** (0.1304)	-1.6080** (0.1448)	-1.3359** (0.1456)
Age 64	0.3890** (0.1235)	-0.5367** (0.1418)	-0.4756** (0.1322)
Age 65	1.4978** (0.1621)	-0.1443 (0.1763)	0.5582** (0.1508)
Age 66	-0.2732 (0.2488)	-1.2332** (0.2456)	-1.1512** (0.2243)
Age 67	-0.8792** (0.3017)	-1.2641** (0.2532)	-0.5951** (0.1961)
Education < 12	0.1340 (0.1250)	-0.1014 (0.1349)	0.2210 (0.1227)
Education > 12	-0.1702 (0.1174)	-0.0927 (0.1251)	-0.1775 (0.1201)
Non-Hispanic white	0.4141** (0.1491)	0.3157* (0.1473)	0.4088** (0.1180)
Have any pension?	0.3292** (0.1067)	-0.3119** (0.1109)	0.0299 (0.1087)
Earnings ages 35-55	1.6485** (0.1455)	1.4474** (0.2427)	0.9120** (0.1728)
Earnings ages 56-61	0.3440** (0.1277)	0.2942 (0.2464)	0.0851 (0.1736)
Earnings at t-1	-1.4664** (0.1004)	-1.7848** (0.2207)	-0.7840** (0.1380)
Spouse’s age	0.0133 (0.00869)	0.0289** (0.0112)	
Spouse’s education < 12	0.1104 (0.1255)	0.1953 (0.1379)	
Spouse’s education > 12	-0.1012 (0.1162)	-0.1495 (0.1285)	
Spouse’s earnings 35-55	0.3421* (0.1534)	1.0697** (0.1061)	
Spouse’s earnings at t-1	-0.1654 (0.1121)	-0.5266** (0.0703)	
Spouse has a pension?		0.1381 (0.1149)	
Male			-0.1172 (0.1143)
Widowed			0.1542 (0.1015)
Log value of non-housing wealth	-0.0155 (0.0524)		
Own a home			-0.0441 (0.1042)
Value of home	-0.0257 (0.0148)		

* indicates p<.05; ** indicates p<.01

Once earnings and pensions are taken into account, education has little to no effect on the timing of Social Security benefit receipt. Married men and single persons with less than a high school education are more likely to start Social Security retirement than are their counterparts with a high school degree (the omitted category), and more educated persons in all three groups, those with greater than a high school education, are less likely to begin receipt than their less well-educated colleagues. However, none of these relationships is statistically significant. If the coefficients were significant, such patterns would not be surprising, as education is likely to be highly correlated with the prospect of having a rewarding job. For married women in these cohorts, however, there is a somewhat different relationship between education and benefit receipt timing. For them, the less-educated are less likely than the high school graduates to retire, though again we cannot say with any confidence that this coefficient differs from zero. As married women's educational and earnings trajectories begin to resemble married men's more closely, the factors influencing women's decisions about Social Security may change. This case illustrates the general difficulties that one faces using estimates from data on current workers in their sixties to project patterns for workers who will enter their sixties in the next century.[9]

A spouse's mid-career earnings (again, measured from age 35 to 55, with exceptions noted above) appear to have a significant, positive influence on the likelihood of benefit receipt of both married men and married women in these cohorts. A spouse's lagged earnings are also quite important for both husbands' and wives' benefit timing, negatively associated with receipt (though the coefficient is not significant for the married men). Among both married men and married women, a spouse's age appears to play a minor role in this process: the older one's spouse, the more likely a person is to begin receiving benefits, though this coefficient was not statistically significant for the married men. A spouse's education does not have significant effects on married persons' Social Security take-up net of these other factors, though the signs mirrored the effects for a person's own education (the likelihood of receipt decreases with more education).

We found that measures of family wealth had negligible effects on the timing of Social Security benefit receipt once all these other elements were taken into account.[10] Likewise, housing wealth had only marginally significant effects. Overall, individuals' earnings and, implicitly, the Social Security wealth that they generate thus appear far more important to this process than other forms of wealth.

3. Simulation of Eligibility Screen

These three equations were applied to a subset of the MINT population that was screened for OASDI eligibility, based upon the individual's and, where applicable, his/her spouse's quarters of Social Security coverage. To screen for eligibility, we compute a Primary Insurance Amount (PIA) for each person in the sample. If the PIA is above zero, then he or she is eligible to retire in his/her own right. We also check, where applicable, each person's current or past Social Security-qualified spouse or spouses. If a person is not currently married (or was widowed but remarried after age 60) and he or she has had more than one Social Security qualifying marriage, we examine multiple past spouses for a non-zero PIA that would render the person qualified for benefits.

4. Assignment of Retirement Timing with Scheduled Increases in the Normal Retirement Age

As these equations were estimated on recent SIPP data, they depict patterns of Social Security benefit timing under the current Social Security system, in which the Normal Retirement Age is set at 65 and the Age of Earliest Eligibility is set at 62. For the sake of simplicity and closer integration with other aspects of the model, in the projections we assume that workers elect to receive their benefits by or at the ultimate Normal Retirement Age (67). Although this has clearly never been the case historically, it is true that only a small fraction of past workers, around six percent in recent years, have elected to receive their benefits after the Normal Retirement Age. Model users might consider extending the sample to include people at risk up to age seventy, the point at which the benefit of delaying benefit receipt falls to zero. We have re-estimated the equations to include more people (i.e., those who still have not applied for Social Security benefits at ages 67 through 69), thus allowing MINT users to relax the assumption of universal receipt by age 67 in future work. Table 5-A-3 in the appendix presents sample estimates of logistic coefficients where the age of first receipt is not capped at 67, but rather at age 69.

Some of the birth cohorts of greatest interest for MINT will begin to receive Social Security benefits after 1999, and will thus face a Normal Retirement Age that will be higher than age 65 but an Age of Earliest Eligibility that will be set at the same level as today (62). (Table 7-A-1 in Chapter Seven depicts the scheduled increases in the Normal Retirement Age, by birth cohort.) Applying the SIPP equations to populations that will face a different set of Social Security rules is surely problematic. Unfortunately, we cannot directly estimate the effects of the Normal Retirement Age (or changes to the NRA) on retirement benefit receipt timing patterns because it has not varied in the years for which we have reliable data.[11] We must therefore instead make assumptions, ideally guided by theory and empirical research, about whether changes in retirement behavior will accompany this change in policy and, if so, how large these changes would be. While we have made the implicit assumption that changes will be negligible, there are several ways that we could modify this assumption.

A first way to modify this assumption would be simply to adjust the coefficients on the age terms in the projection in an *ad hoc* fashion to achieve a targeted level of behavioral adjustment. One could, for example, use estimates of behavioral response from the Social Security Office of the Chief Actuary to set these targets.

Using expected Social Security benefits or Primary Insurance Amounts rather than lifetime earnings as explanatory variables in these equations is another feasible, and perhaps more satisfying but nonetheless still *ad hoc*, way to extend the model and modify this assumption.[12] Such an approach would both capture the non-linear replacement of income by Social Security and also allow us to account explicitly for changes in future Social Security benefits already mandated in the law through the increases in the Normal Retirement Age. In changing the model in this way, we would need to be cautious and to consider that individuals' responses to benefit changes may not mirror the existing variation in receipt choices by benefit levels. Responses to changes in benefits might also be better captured using benefit thresholds rather than continuous benefit levels (which would imply that individuals always shift with a benefit cut) or perhaps interactions between benefit and educational levels.

In other work, several members of the Urban Institute MINT team have used these same data (SIPP matched to the MBR and SER) to attempt to estimate the effects of tax rates on earnings on work and benefit receipt choices (See Favreault, Ratcliffe, and Toder, 1999). They developed a joint model of Social Security benefit receipt and work (at and after age 62). Rather than applying the MINT Chapter Five and Chapter Six functions sequentially, in this work, a single, multinomial hazard model predicts individuals' transitions into one of four separate states: collect Social Security benefits and not work, collect Social Security benefits and work, do not collect Social Security benefits and work, do not collect Social Security benefits and do not work. Such a model implies that work and benefit receipt choices are so tightly coupled that one best represents them with a single process. Predictors in this model included one's expected Social Security benefit at the time of potential receipt, which had a negative effect on the likelihood of working (i.e., the higher the benefits, the less likely it is that one would work), and the total tax rate on earnings, which also had a negative effect on work effort (i.e., the higher the tax rate on earnings, the less likely it is that one would work). Researchers at SSA may wish to consider implementing this sort of specification in MINT. As with the current, binary model, one needs to be cautious about interpreting the results of such a reduced-form model in the face of structural changes to Social Security. The model can nonetheless give some limited insight into the potential directions and magnitudes of benefit receipt and work choices in the face of scheduled benefit cuts (e.g., by means of the increase in the Normal Retirement Age).

While Figure 5-1 reveals that individuals' dates of first receipt cluster around their birth month at ages 62 and 65, it also suggests that they do not cluster in this way at ages 63 and 64. Further, into the future, individuals may be influenced by the Normal Retirement Age signal of age 65 or 66 and a certain number of months. Accounting for heterogeneity in Social Security benefit timing *within* single-year age groups could thus be advantageous for investigating changes that would result from raising the Early and/or Normal Retirement Ages. The model described here could be extended to account for within-year heterogeneity in several different ways. We have chosen the simplest approach: imposing within-year heterogeneity randomly by using historical distributions. This approach should be adequate unless there are significant distributional differences in *within-year* benefit timing (e.g., if it is the case that wealthy people are more likely to retire right after a birthday, while less well-off people are more likely to apply for benefits mid-year).

If this assumption of randomly distributed within-year variation in retirement timing is problematic, these differentials could be integrated into the model in the estimation phase.

Maintaining a discrete-time event history framework, we could examine semi-annual, quarterly, or even monthly observations on the persons at risk, rather than annual ones.[13] We could alternatively model the dependent variable as a continuous rather than discrete outcome and estimate a continuous-time hazard model, since exact dates of birth and months of Social Security receipt are available in the estimation data sources. Continuous- and discrete-time event history models tend to yield similar results (see, for example, discussion in Alison, 1984), but have different limitations and requirements.

5. Results from Simulation Analyses

When we use these estimated coefficients from SIPP to project timing of Social Security benefit receipt for members of the MINT population, we find that almost 60 percent (4.6 + 1.2 + 53.9) of eligible individuals elect to receive their benefits at or before age 62. Table 5-2 reports the frequency of retirees at each age in Column A and the corresponding weighted and unweighted percentages in Columns B and C. The table reveals that the weighted and unweighted distributions from MINT are very similar, and henceforth, we present weighted estimates.

Table 5-2
Percentages of MINT and Historical (1996) Populations Electing to Receive Social Security Benefits at Given Ages

	MINT Predictions			Historical Estimates				Difference
	A	B	C	D	E	F	G	H (C-G)
Age	Unweighted Frequency	Unweighted Percentage	Weighted Percentage	All Retired Workers	D Less Disability Conver-sions	E Plus Wives* of Retired Workers	F Plus Most Survivors	MINT Minus Most Similar Historical
60	3,752	4.8	4.6	-	-	-	4.6	0
61	1,019	1.3	1.2	-	-	-	1.3	-0.1
62	41,980	53.4	53.9	53.1	60.1	59.5	56.5	-2.6
63	7,961	10.1	10.3	6.6	7.5	7.6	7.1	+3.2
64	11,226	14.3	14.2	9.6	10.8	10.7	9.9	+4.3
65	7,646	9.7	9.6	25.4	15.7	15.3	14.2	-4.6
66	1,654	2.1	2.0	1.8	2.0	2.1	1.9	+0.1
67+	3,752	4.4	4.2	3.5	4.0	4.7	4.4	-0.2
N/A	34,399							

*Husbands of retired workers are not included in this column because of the small number of affected cases.
MINT Source: Urban Institute tabulations, September, 1999
Historical Source: *Annual Statistical Supplement*, 1997, Tables 6.A4 and 6.D3

Table 5-2 also contrasts the estimates for the MINT population to similar historical estimates based on Social Security Administration data. There are no historical data that are exactly analogous to the estimates the model produces, because people who die before receiving benefits or who do not apply for benefits despite their eligibility are not included in Social Security records. The closest source for comparison is new award data for those first receiving Social Security retirement benefits in 1996 (the most recent year for which detailed statistics are available), from which we can construct a synthetic retirement cohort.[14]

For these comparisons, we first consider data on retired workers (in Column D). We need to eliminate disability conversions from these historical estimates, because individuals who converted their benefits from DI to retired worker benefits were not included in either the original estimation or the projection. When we do so, in Column E, we see that the historical spike in Social Security receipt at age 65 declines greatly, and an even higher proportion of workers retires at 62. We also wish to include spouse recipients in our comparisons, because they were included in both the estimation and projection phases. We add them in Column F, causing only minor changes to the totals retiring at each age. Survivors whose first Social Security receipt is as a survivor should also be included in these estimates. We do so in Column G, but caution that this poses some challenges.[15]

Contrasting the MINT projection estimates (Column C) to the closest possible historical data on benefit receipt timing (Column G), we see some similarities. Differences between the two estimates are presented in Column H. The proportions of Social Security recipients retiring at ages 62 and 65 are somewhat lower in MINT than in the historical figures, while proportions starting Social Security at 63 and 64 are a bit higher in MINT than observed historically. Otherwise, though, the patterns are quite close. While the discrepancies at ages 62 and 65 may suggest potential improvements for the model, we should of course expect some differences between the MINT and historical estimates. The composition of the U.S. population eligible for Social Security should change considerably between 1996 and 2031 (the year that the youngest members of the MINT sample turn age 66). Women's greater likelihood of receiving Social Security benefits as workers (as opposed to solely as wives) could be playing an especially important role in the changes. Further, the method employed for projecting earnings leads to substantially different distributions of the variable for earnings at time t-1, one of the key determinants of benefit receipt timing, in the projection and estimation samples. For men, means on this variable are much lower in the projection sample than in the estimation group, leading to higher predicted probabilities, and hence more retirements at ages 63 and 64, than we observe historically. For women, we see similar, though less extreme, results at ages 63 and 64.

The final row in Table 5-2, labeled "N/A," reveals that almost 35,000 MINT persons, just over thirty percent of the total, are not assigned a Social Security retirement age in the model. There are three reasons why an individual would not be assigned a benefit receipt age: he or she died before becoming eligible for Social Security (and, to promote consistency with earnings projections in Chapter 2, this includes attainment of eligibility within the year of death) or before electing to retire, he or she became disabled (as defined using the DI_PRED variable that is used in Chapter 2) before retirement, or he or she is not eligible for a Social Security benefit.[16] About a quarter of the MINT population dies or becomes disabled before reaching age 62, and almost a third before reaching age 67. Only a small fraction of the MINT population is ineligible for Social Security as either a worker or a spouse, a total of just under 5,300 persons, or a bit less than 4.7 percent of the total population. Individuals in this group include long-term government workers who are not married to Social Security qualified workers and also individuals without significant attachment to the labor force.

Returning to those members of the MINT population designated to be Social Security recipients, Tables 5-3A and 5-3B document important distributional differences for men and women, respectively, between those who elect to receive their benefits early and those who collect Social Security later. The differences by sex that are revealed in these tables appear to be quite important. On average, MINT women elect to receive Social Security benefits about a quarter of a year earlier than do MINT men (men's average age at first receipt is 63.01, while women's is 62.74). About 64 percent of MINT women receive their benefits at or before age 62, compared to just over 54 percent of all men. While women tend to receive their benefits earlier than men, they are also slightly more likely to wait until age 67 before receiving them than are men. This projected gender differential in benefit receipt timing is similar to that observed in historical data. Table 5-A-4 in the Appendix details differences between the MINT and historical estimates by sex.

Marriage patterns also appear to be quite important to benefit timing, with ever married women projected to begin benefit receipt on average almost a year earlier than their never married counterparts. While 65 percent of ever married women begin to receive Social Security benefit at or by age 62, only 44 percent of the never married women do. The availability of noncontributory benefits to ever married women surely plays an important role in this difference. Never married men also retire later than ever married men, by about half a year, but the difference is not quite as extreme as with the women. This suggests that the never married men may have more resources from which to draw than do the never married women. Racial differences in benefit timing also appear quite sizable in these tables, with nonwhite men and women more likely to postpone retirement than white men and women. The proportion of nonwhites retiring at age 67 is about double the proportion of whites retiring at this age for both men and women. On average, nonwhites retire about a third of a year later than whites.

Patterns in benefit receipt by birth cohort are less obvious than the gender, racial, or marital history patterns. The figures do not reveal any clear pattern in Social Security receipt across the cohorts in MINT.[17] The lack/modesty of cohort change observed in these projections is surely due in part to our assumption of no change in behavior with increments to the Normal Retirement Age. One can justify such an assumption by the fact that Social Security offers so compelling a change in income from non-work at age 62 that changes to benefit levels may need to be quite large to offset the lure of retirement, especially for those in unrewarding occupations. We are unsatisfied with this assumption, however, and hope to pursue alternative specifications.

Table 5-3A
Projected Percentage of MINT Men in Various Demographic and Economic Groups Electing to Receive Social Security Benefits at Given Ages

	60	61	62	63	64	65	66	67	Mean
All Men	1.0	0.3	53.1	12.1	17.3	10.7	1.8	3.6	63.01
Ever married	1.1	0.3	53.4	12.2	17.4	10.6	1.7	3.3	63.00
Never married	-	-	46.9	10.8	14.0	13.3	4.9	10.1	63.49
1931-35	0.3	0.1	54.4	10.9	17.8	12.3	1.0	3.2	63.02
1936-40	0.7	0.1	53.1	12.5	19.4	10.4	1.4	2.4	62.98
1941-45	0.8	0.3	55.5	13.6	16.7	8.9	1.1	3.0	62.85
1946-50	1.0	0.2	53.9	12.9	17.8	9.5	1.4	3.1	62.83
1951-55	1.3	0.4	54.6	13.4	16.5	9.5	1.3	3.1	62.98
1956-60	1.4	0.3	54.0	12.8	17.2	9.7	1.2	3.3	62.88
Nonwhite	2.0	0.7	43.1	11.8	16.8	15.4	3.0	7.2	63.34
White	0.9	0.3	54.6	12.2	17.3	10.1	1.7	3.1	62.98
1st real AIME quintile	5.1	1.1	34.6	7.7	15.2	16.7	3.4	16.1	63.70
2nd real AIME quintile	2.8	1.0	41.1	8.4	18.4	18.2	3.0	7.1	63.41
3rd real AIME quintile	1.4	0.6	49.9	11.0	19.9	12.2	1.8	3.3	63.07
4th real AIME quintile	0.3	0.1	55.0	13.9	17.6	9.7	1.7	1.7	62.93
5th real AIME quintile	0.0	0.0	60.6	13.4	16.0	7.4	1.2	1.3	62.78

Source: Urban Institute tabulation from MINT file, September, 1999

Table 5-3B
Projected Percentage of MINT Women in Various Demographic and Economic Groups Electing to Receive Social Security Benefits at Given Ages

	60	61	62	63	64	65	66	67	Mean
All Women	7.4	2.0	54.6	8.8	11.7	8.6	2.2	4.8	62.74
Ever married	8.1	3.0	54.2	9.5	11.1	8.2	1.1	4.9	62.66
Never married	-	-	45.0	10.5	16.7	14.0	1.1	12.7	63.55
1931-35	7.4	3.0	55.5	8.6	11.1	8.5	1.9	4.0	62.66
1936-40	8.8	2.5	55.6	7.7	11.9	7.8	1.7	4.0	62.61
1941-45	9.2	1.9	55.0	8.2	12.2	8.0	1.4	4.0	62.56
1946-50	7.3	1.6	57.7	8.7	11.8	8.2	1.3	3.4	62.63
1951-55	7.1	1.9	56.7	8.9	11.6	7.9	1.6	4.3	62.68
1956-60	6.8	1.7	55.3	9.7	12.3	8.6	1.8	3.8	62.71
Nonwhite	8.4	2.2	46.0	8.7	12.3	11.4	2.7	8.3	63.01
White	7.3	1.9	56.0	8.8	11.6	8.1	2.1	4.2	62.69
1st real AIME quintile	15.0	2.1	51.8	6.9	9.2	6.7	2.6	5.7	62.52
2nd real AIME quintile	9.4	3.4	53.3	8.4	11.1	8.6	1.6	4.2	62.62
3rd real AIME quintile	2.3	1.8	56.4	9.8	13.1	9.6	2.3	4.9	62.92
4th real AIME quintile	0.7	0.6	56.7	10.7	14.5	10.4	2.3	4.1	62.99
5th real AIME quintile	0.2	0.1	59.5	10.6	13.6	9.9	1.9	4.2	62.96

Source: Urban Institute tabulation from MINT file, September, 1999

Position in the income distribution, defined by ranking people by unisex quintiles of average indexed monthly (covered) earnings (AIME) at age 62, has different effects on the timing of Social Security benefit receipt for men and women.[18] Men with higher earnings are more likely to retire early than are other men. In contrast, women's likelihood of retiring increases if they have very low lifetime earnings. Low relative lifetime earnings clearly implies very different things about men and women in these cohorts. For women, low AIMEs sometimes reflect a choice not to participate in the labor force, perhaps because a husband's income is adequate, whereas for the men low AIMEs nearly always reflect low wages. It is not surprising, then, that women in this group would take-up benefits early, while men in the group may have no choice but to continue to work to make ends meet. When interpreting these quintile results, it is also important to keep in mind that there are very few women in the upper two AIME quintiles, and that it is therefore quite difficult to make inferences about high-income women's behavior based on these estimates.

6. Forces Generating Changes in Timing of Social Security Benefit Receipt

The modesty of the cohort changes that we have seen in the last few tables mask several important trends affecting the composition of Social Security awards. One striking change across cohorts that affects both the composition and timing of first Social Security benefit receipt is the dramatic increase in predicted disability rates over time. Disability rates range from 12.8 percent for men and 8.2 percent for women in the earliest MINT cohorts (1926 to 1930) to almost 24 percent for men and 18.8 percent for women in the latest cohorts (1961 to 1965). This sizable shift greatly diminishes the pool at risk of experiencing the transition to retired worker status through the stochastic process.

Changes in women's earnings are a second dramatic influence on the composition of Social Security benefits by type (i.e., more women will receive first benefits as workers rather than as spouses or dual entitlees), but they may have offsetting effects on the timing of women's benefit receipt. While about two-thirds of the women in the first cohorts qualify for Social Security benefits on their own records (i.e., have accrued at least 40 covered quarters), virtually all (just shy of 97 percent) of the women in the last cohorts do. As women's lifetime income gains serve to accelerate their retirement, their greater education, pension coverage, and returns to work, combined with their greater likelihood of being unmarried at the time of retirement, simultaneously serve to slow it down.

7. Potential Inconsistencies in the Estimates

The main estimates presented here are based upon a September, 1999 simulation. For this simulation, we made a single pass through the MINT population, examining each person at each age at which he/she was eligible but had not yet begun to receive Social Security benefits. For couples, each spouse's projections were made independently, based on whether each member of the couple was theoretically eligible to receive benefits (either as a spouse or as a worker). This means that an individual who is eligible for benefits *only* as a spouse (as opposed to as a worker or dually entitled worker) could potentially be assigned a Social Security retirement age that is earlier than that of the worker on whose record he/she is entitled to benefits. This is a scenario that could not occur in actuality. Because women are more likely than men to qualify as spouses and also tend to be younger than their husbands, this inconsistency is not likely to affect a large number of cases, especially at age 67. Nonetheless, an improved simulation would correct this discrepancy.

8. Current Integration of these Results into Other Parts of MINT

Social Security benefit receipt timing information is currently being used in two separate places in MINT. In Chapter Six, information on each person's age at Social Security benefit receipt is used to determine whether earnings in partial retirement need to be projected. For those cases where earnings in partial retirement are projected, the earnings initially projected in Chapter Two are overwritten with the new partial retirement earnings. This should lead to a more realistic distribution of earnings between ages 62 and 67. Information from this project is also relevant for Chapter Seven, which projects resources, including Social Security income and wealth, in each year of retirement.

In principle, information about benefit receipt timing could be used in other parts of the model as well. For example, one could assume that individuals draw their pensions at the same time as they draw their Social Security benefits. This would require revising the pension projection methodology, a task that would take considerable time and effort.

III. CALCULATION OF SOCIAL SECURITY BENEFITS FOR CHAPTER 7

We compute a lifetime stream of Social Security benefits for all members of the MINT sample who become disabled and are eligible for Social Security disabled worker benefits or who live to receive a Social Security retirement age (as described above) and either are eligible for benefits themselves or are married to an eligible worker. Some simplifications were made in these algorithms, and there is thus considerable opportunity for extension of this section of the model.

Within the determination of one's age of Social Security receipt, we make two important computations. First, as described in the section on our eligibility screen, we compute a person's AIME and PIA at time t, taking into account any additional earnings that the person may have had at time t-1. We then convert this PIA into a benefit by applying cost-of-living adjustments and any actuarial reductions or delayed retirement credits for which the worker is eligible. At the same time, we also identify each person's reference spouse, if applicable, at each potential retirement age. For most people, the reference spouse is either the current or most recent spouse. Only about 4,300 MINT sample members have competing spousal entitlements (that is, more than one spousal record on which they are potentially eligible for Social Security benefits) at the time of their first Social Security entitlement. Where a person has competing spousal entitlements, we take the highest possible spousal PIA (adjusted for cost-of-living changes and the fraction of this spouse's PIA replaced in the benefit: 50 percent as a spouse, 81.5 percent as a disabled widow/widower, or 100 hundred percent as a survivor) at time t as the basis for computing any potential auxiliary benefit. We then compare a worker's own benefit with the potential spousal benefit and assign the worker the higher of the two as the starting value for his/her Social Security benefit.

After first disablement or first Social Security retirement benefit take-up, the model updates initial benefits annually to account for cost-of-living adjustments (at the rate assigned in the 1998 Trustees' Report). The model also monitors Social Security beneficiaries for family changes that could increase a recipient's benefit level. These changes include having a spouse die, reach Social Security retirement age, or become disabled in the projection period. Where one of these changes occurs, the model compares the person's worker benefit, if he or she is eligible for one, to any spousal benefit for which he or she might be eligible and, again, takes the higher of the competing entitlements. While we have not included new marriages after first entitlement into the updating algorithm, we could add this extension fairly readily. Only about five percent of the sample remarries after age 62, and a much smaller fraction would experience a change in entitlement as a result of remarriage (e.g., few men who remarry would do better as a spouse than as a worker, and few widowed women would do better with half of a new spouse's PIA than with a survivor benefit based on 100 percent of a former spouse's PIA).

A few additional caveats about the estimated Social Security benefits are warranted. As noted in the prior section on the retirement timing algorithms, the model accounts for within-year variation in retirement timing in a relatively crude way. We have randomly imputed a distribution of dates of receipt within the year based on historical patterns. Urban Institute tabulations from the MBR suggest that while relatively small fractions of those starting to receive benefits at age 62 or 65 first collect in the last six months of their birth year (10.3 and 5.6 percent, respectively), the majority (64.4 percent) of those first collecting at Social Security age 64 do so. Sixty-three year old recipients are evenly split between the first and second half of the birth year (51.7 and 48.3 percent). The full distribution of probabilities of first receipt at each month by age of first entitlement is available in the file projectr.sas, under the SAS macro "%addmonth." We do not adjust the Social Security benefit in the year of first receipt based on the month of retirement, as earnings in partial retirement are estimated based on the assumption of a full year in partial retirement.

APPENDIX A
MEASUREMENT ISSUES

SIPP birthdates differ fairly significantly from the birthdates reported on the MBR. Figure 5-A-1 reveals a large spike, of about ten percent, of people who in the SIPP reported their birth year as being exactly one year later than it appears in the MBR.[19] Further, discrepancies are skewed to the right (i.e., people are more likely to report their age as younger than the age on the MBR rather than older than the age on the MBR) at other age levels as well. The birthdate that we used for both estimation of the logistic coefficients and projection of future states was the MBR birthdate. While we believe that using the MBR information minimizes reporting error on this key variable, we know that it does not eliminates error altogether. There are certainly typographical and other errors in the MBR reports, and there are possibilities for analysts to misinterpret values on the MBR file (e.g., to mistake a missing data code for a valid year, or to make century errors on birthdates, since a small number of Social Security recipients observed in the SIPP could indeed have been born in the last century).

Knowing a person's birth year with certainty is important for all aspects of MINT, from assigning his/her annual earnings levels, to determining his/her disability dates from administrative records and simulation algorithms, to computing her/his date of death (and hence remaining life span at various ages). In the assignment of age of first benefit receipt in MINT, discrepancies in birthdates have particularly noticeable and troublesome effects. This problem is due to the fact that we derive a sizable fraction, about 7.9 percent, of the assignments of the ssage variable from data on first receipt of Social Security benefits from the MBR. Specifically, if the person's date of entitlement is after the point at which he/she turns age 60 and his/her type of benefit from the MBR is listed as retired worker or survivor, then we compute his/her age at first benefit receipt using his/her birthdate and the MBR date of first entitlement instead of simulating it using the logistic function. In prior simulations, when we assumed that the person's birthdate was in fact the date found on the core MINT file, base0322.sd2, we generated inappropriate spikes in retirement timing (analogous to those illustrated by the SIPP line in Figure 5-1) at ages 61 and 64. When we overwrote the person's MINT birthdate with her/his MBR birthdate, these spikes disappeared almost completely.

Unfortunately, though, whether, how, and when we overwrite the birthdate on the base0322.sd2 file has implications elsewhere in the model. There are a number of different ways in which one could make this change; changes can be conditional or unconditional, they can be permanent or temporary. Alternative approaches yield different results, and have different strengths and weaknesses. Understanding the mechanics of the procedures currently employed in MINT and used in past simulations can thus shed light both on the limits of the method and on the advantages and disadvantages to various alternative approaches. To be more concrete, in earlier simulations, we overwrote the SIPP birthdates with MBR birthdates only when the new (MBR) birthdate still fell within the MINT time frame, that is, when the new (MBR) birthdate fell between 1926 and 1965, inclusive. This approach had the comparative advantage of greatly reducing the number of age sixty-one and sixty-four recipients, and also of minimizing the number of large shifts in birthdates. It had the disadvantage of failing to take into account some information that would enable us to make a more accurate assignment. For example, tabulations from the MBR suggest that about 180 people in MINT were born in 1925. Another disadvantage to this approach was that permanently using MBR birthdates caused consistency problems with other aspects of the model, most notably with the demographic projections from RAND. By permanently shifting the birthdates of a substantial fraction of the MINT population downward, we were necessarily changing the model's implicit assumptions about life expectancy, an action that was clearly problematic and, moreover, outside of the domain of our work.

In our current approach, when making assignment of Social Security first receipt age from the MBR, we thus chose to *temporarily*, rather than permanently, overwrite a person's MINT/SIPP birthdate with her/his MBR (presumably real) birthday. We return to using the RAND birthdate once we have assigned all MBR-generated ages of first receipt. Further, in all cases, not just those in which birthdates fall between 1926 and 1965, we assume that the MBR estimate is superior to the SIPP estimate. A major advantage of this approach is that we do not cause any changes to the aggregate demographic assumptions. We obtain what is probably a better estimate of the age at first receipt, again greatly reducing age 61 and 64 spikes, even if our year of first receipt will be somewhat flawed. Disadvantages arise when there are problems with MBR birthdates and/or receipt dates. Further, these estimates may be inconsistent with individuals apparent demographic status (with respect to marriage) at retirement age.

We do not, then, believe that this solution is ideal. Fortunately, MINT users have already developed programs to overwrite our predictions when demographic inconsistencies arise. Users of MINT at SSA may wish to consider changing these important assumptions more fundamentally in future development of the model. Because of time constraints, we were unable to ensure consistency in assumed year of birth of each sample member across estimation and projection data sources. As we have tried to illustrate, subtle yet sometimes important differences arise with minor changes to these assumptions.

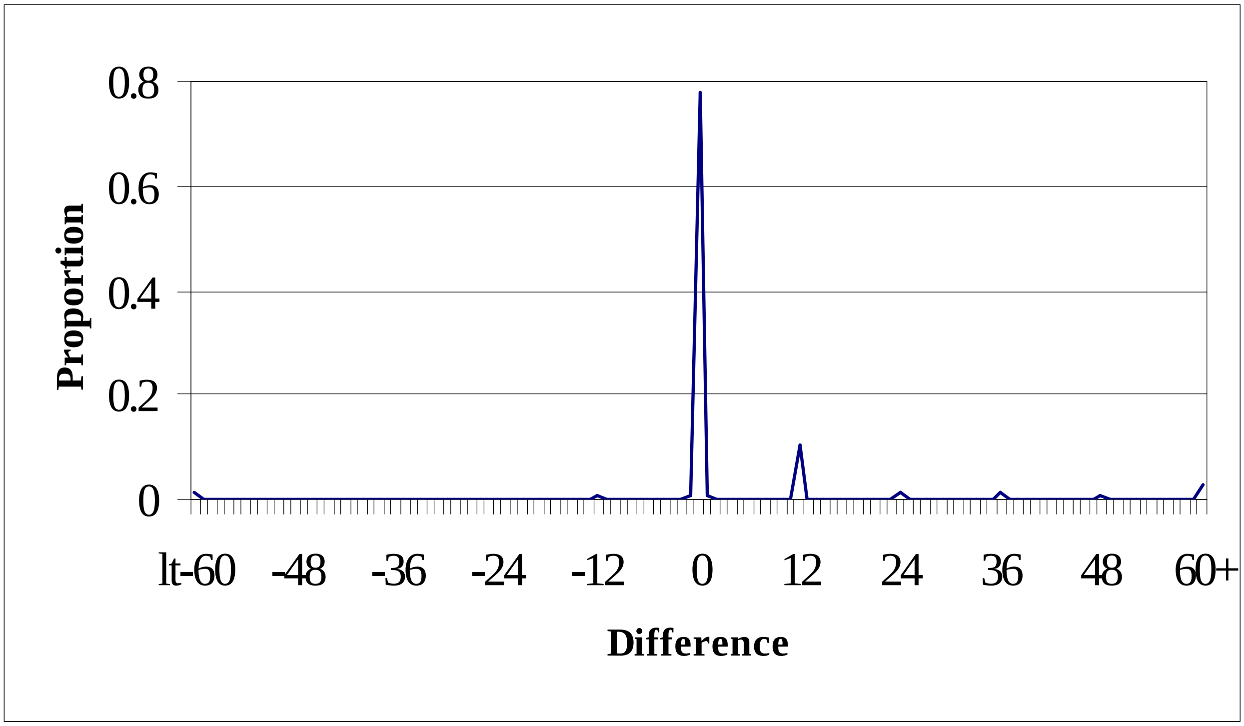
TECHNICAL NOTE

Throughout the programs that generate these estimates, we rely heavily on the SAS function "intnx" to develop reference dates of events that impact Social Security entitlement. Due to a subtle difference in the way that this function increments dates when using year values (as opposed to month or day values), we have inadvertently rounded some event dates to January 1 of the year in question, rather than using the proper date.

As this issue was discovered late in the preparation of this report, we were unable to correct it. While we do not expect that changing these portions of the computer code would have large consequences, MINT users at SSA may nonetheless wish to correct this problem in future simulations. Improved code provided in the program called "projecr2.sas" addresses this issue.

Figure 5-A-1
Distribution of Differences
Between MBR Ages and SIPP Ages

(N=28,732)



Source: Urban Institute tabulation from 1990-1993 SIPP matched to the 1990-1993 MBR
Sample: Individuals who, according to SIPP birthdate, reach any age between 61 and 70 at any point during the life of the panel
Missing Values: 9013

SUPPLEMENTAL TABLES

Table 5-A-1
Percentages of MINT Population Electing to Receive Social Security Benefits at Given Ages According to MBR data

Age	Frequency (N=8934)	Percentage
60	522	5.84
61	134	1.50
62	5371	60.12
63	699	7.82
64	1000	11.19
65	988	11.06
66	91	1.02
67+	129	1.44

Source: Urban Institute tabulation of MINT projection file (base0322.sd2) merged with Master Beneficiary Record data, September, 1999.

Table 5-A-2
Logistic Regression Coefficients:
Social Security Benefit Receipt Timing for Married Men
Where no Wealth Variables are Employed

Variable	Parameter Estimate (Standard Error) (N=2895)
Intercept	-2.4717** (0.5372)
Age 63	-1.0951** (0.1277)
Age 64	0.3798** (0.1213)
Age 65	1.4421** (0.1580)
Age 66	-0.2173 (0.2409)
Age 67	-0.8007** (0.2860)
Education < 12	0.1471 (0.1224)
Education > 12	-0.2061 (0.1152)
Non-Hispanic white	0.3615* (0.1457)
Have any pension?	0.2968** (0.1025)
Earnings ages 35-55	1.6563** (0.1425)
Earnings ages 56-61	0.3268** (0.1248)
Earnings at t-1	-1.4460** (0.0981)
Spouse’s age	0.0144 (0.00854)
Spouse’s education < 12	0.0904 (0.1227)
Spouse’s education > 12	-0.0926 (0.1137)
Spouse’s earnings 35-55	0.3806* (0.1502)
Spouse’s earnings at t-1	-0.1941 (0.1107)

* indicates p<.05; ** indicates p<.01

Table 5-A-3
Logistic Regression Coefficients:
Social Security Benefit Receipt Timing
Where Receipt is Capped at Age 69, Rather than Age 67

Variable	Parameter Estimate (Standard Error)		
	Married Men (N=2936)	**Married Women (N=2439)**	**Unmarried People (N=2390)**
Intercept	-2.3011** (0.5334)	-2.2255** (0.7213)	-0.6626** (0.1561)
Age 63	-1.1260** (0.1298)	-1.6153** (0.1448)	-1.3431** (0.1459)
Age 64	0.3780** (0.1227)	-0.5388** (0.1416)	-0.4789* (0.1324)
Age 65	1.4739** (0.1609)	-0.1283 (0.1760)	0.5669** (0.1511)
Age 66	-0.2500 (0.2474)	-1.2103** (0.2457)	-1.1357** (0.2246)
Age 67	-0.8490** (0.3001)	-1.2333** (0.2531)	-0.5800** (0.1964)
Age 68+	-0.1501 (0.2381)	-0.9158** (0.1993)	-0.9988** (0.1734)
Education < 12	0.1302 (0.1217)	-0.0216 (0.1304)	0.1933 (0.1170)
Education > 12	-0.1420 (0.1149)	-0.0879 (0.1208)	-0.1587 (0.1160)
Non-Hispanic white	0.3218* (0.1437)	0.3074* (0.1422)	0.4723** (0.1128)
Have any pension?	0.2739** (0.1039)	-0.3231** (0.1074)	0.0174 (0.1046)
Earnings ages 35-55	1.6772** (0.1432)	1.4546** (0.2392)	0.9950** (0.1691)
Earnings ages 56-61	0.3116* (0.1249)	0.2524 (0.2404)	0.0108 (0.1694)
Earnings at t-1	-1.4041** (0.0977)	-1.7043** (0.2134)	-0.7537** (0.1339)
Spouse’s age	0.0125 (0.00845)	0.0260* (0.0106)	
Spouse’s education < 12	0.1140 (0.1221)	0.2085 (0.1325)	
Spouse’s education > 12	-0.0844 (0.1134)	-0.0922 (0.1241)	
Spouse’s earnings 35-55	0.3484* (0.1494)	1.1499** (0.1023)	
Spouse’s earnings at t-1	-0.1525 (0.1096)	-0.5278** (0.0685)	
Spouse has a pension?		0.1413 (0.1101)	
Male			-0.1773 (0.1098)
Widowed			0.2030** (0.0973)
Log value of non-housing wealth	-0.0204 (0.0513)		
Own a home			0.00953 (0.0999)
Value of home	-0.0188 (0.0144)		

* indicates p<.05; ** indicates p<.01

Table 5-A-4
Percentages of MINT and Historical (1996) Populations Electing to Receive Social Security Benefits at Given Ages, by Sex

	60	61	62	63	64	65	66	67+
All men in current MINT (weighted)	1.02	0.32	53.12	12.13	17.27	10.74	1.82	3.57
Most similar historical	0.54	0.27	56.70	8.08	11.00	16.93	2.29	4.20
Difference (current MINT-historical)	+0.48	+0.05	-3.58	+4.05	+6.27	-6.19	-0.47	-0.63
All women in current MINT (weighted)	7.44	1.96	54.57	8.79	11.68	8.61	2.17	4.78
Most similar historical	8.01	2.24	56.36	6.26	9.04	11.88	1.65	4.55
Difference (current MINT-historical)	-0.57	-0.28	-1.79	+2.53	+2.64	-3.27	+0.52	+0.23

MINT Source: Urban Institute tabulation, September, 1999
Historical Source: *Annual Statistical Supplement*, 1997, Tables 6.A4 and 6.D3

Table 5-A-5
Indicators of Future Social Security Eligibility of Americans: Percentage with Various Levels of Quarters of Social Security Coverage as of 1996 by Sex and Birth Cohort (Unweighted)

	Birth Cohort and Sex															
Number of Quarters	1926-30		1931-35		1936-40		1941-45		1946-50		1951-55		1956-60		1961-65	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
0	8.2	1.6	3.4	1.0	2.8	0.8	2.2	0.8	1.9	0.7	1.6	0.7	2.2	0.7	2.6	1.3
1-5	6.9	1.1	3.6	0.5	3.0	0.3	2.5	0.5	1.9	0.5	2.3	0.6	2.3	0.6	2.7	0.6
6-10	4.1	0.8	3.6	0.8	2.8	0.4	2.0	0.5	2.1	0.8	1.8	0.6	2.3	0.8	2.7	0.9
11-15	4.0	0.8	3.2	1.0	2.6	0.5	2.7	0.6	2.4	0.8	2.3	0.9	2.5	0.7	3.1	1.4
16-20	3.2	1.3	3.2	0.9	3.4	1.0	2.7	0.7	2.6	1.2	2.9	1.1	3.1	1.1	3.9	1.6
21-25	3.7	1.3	3.1	1.0	3.2	0.9	2.7	1.1	2.9	1.2	2.9	1.3	3.0	1.6	4.1	1.7
26-30	2.8	1.2	3.0	0.7	2.4	0.9	2.2	1.0	2.6	0.9	2.7	1.7	3.6	1.6	4.2	2.5
31-35	3.2	0.9	2.7	0.8	2.9	1.2	3.1	1.6	2.8	1.1	2.9	1.4	4.2	1.9	5.1	3.3
36-40	2.4	1.2	2.6	1.2	3.0	1.1	3.1	1.5	2.7	1.6	3.8	1.9	4.1	2.5	5.8	4.7
>40	61.6	89.8	71.6	92.2	74.0	93.1	76.8	91.8	78.2	91.3	76.7	90.0	72.9	88.6	65.8	81.9

Source: Urban Institute tabulation from Survey of Income and Program Participation merged to Summary Earnings Records, July, 1999

Table 5-A-6
Indicators of Future Social Security Eligibility of Americans: Percentage with Various Levels of Quarters of Social Security Coverage as of 1996 by Sex and Birth Cohort (Weighted)

	Birth Cohort and Sex															
Number of Quarters	1926-30 F	1926-30 M	1931-35 F	1931-35 M	1936-40 F	1936-40 M	1941-45 F	1941-45 M	1946-50 F	1946-50 M	1951-55 F	1951-55 M	1956-60 F	1956-60 M	1961-65 F	1961-65 M
0	8.8	1.6	3.5	0.8	3.0	0.7	2.2	0.6	1.9	0.7	1.6	0.8	2.2	0.8	2.6	1.3
1-5	6.5	1.1	3.6	0.4	2.9	0.2	2.6	0.4	1.9	0.4	2.1	0.6	2.4	0.8	2.5	0.5
6-10	4.2	0.7	3.4	0.8	2.8	0.4	1.9	0.6	2.1	0.9	1.8	0.6	2.2	0.9	2.6	0.9
11-15	3.6	0.9	3.2	0.9	2.3	0.6	2.7	0.5	2.7	0.7	2.4	0.9	2.5	0.5	3.2	1.2
16-20	3.5	1.3	3.3	0.9	3.8	0.9	2.9	0.7	2.5	1.2	2.4	0.9	3.1	1.0	3.7	1.8
21-25	3.9	1.3	3.3	1.0	3.0	1.1	2.4	1.0	2.8	1.4	2.9	1.2	2.9	1.3	4.0	2.0
26-30	2.9	1.3	2.8	0.6	2.3	0.9	2.2	1.1	2.7	0.9	2.7	1.5	3.4	1.6	4.0	2.0
31-35	3.3	1.0	2.6	0.8	2.7	1.1	2.8	1.5	2.8	1.0	3.0	1.5	4.2	2.2	5.0	3.4
36-40	2.3	1.1	2.4	1.1	2.8	1.2	3.1	1.3	2.3	1.7	3.9	2.0	3.8	2.6	5.8	4.8
>40	60.9	89.9	71.8	92.7	74.5	92.9	77.2	92.3	78.4	91.1	77.3	90.1	73.4	88.1	66.5	82.2

Source: Urban Institute tabulation from Survey of Income and Program Participation merged to Summary Earnings Records, July, 1999

CHAPTER 5: REFERENCES

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CHAPTER 5: LIST OF FIGURES

CHAPTER 5: ENDNOTES

1. Table 5-A-1 in Appendix A presents estimates of the distribution of ages of first receipt found in the administrative records. An additional section in the appendix provides a discussion of measurement issues associated with using the administrative and survey data, and estimates of the nontrivial differences in observed outcomes when one uses birth dates from different data sources (self-reports versus administrative reports).

2. Low-earning is defined in terms of the exempt amount for earnings before the Normal Retirement Age. Aggregate data suggest that a deterministic function reasonably approximates this process over the historical period. In 1996, nearly a quarter (about twenty-three percent) of all new benefits for surviving spouses were paid to 60 year-olds (Social Security Administration, 1997, Table 6.D7).

3. This results in part from the structure of MINT, which to a large extent precludes a traditional economic framework of utility maximization. While different aspects of earnings histories and family composition included in the equations may suggest some simple optimization rules (e.g., spouses tend to coordinate their timing decisions), these structures are not explicit.

4. Separate equations by sex for those men and women who were not married at the time they were at risk of receiving Social Security appeared unnecessary. Coefficient estimates suggest no significant differences between men and women in the pooled equation and no significant gender interaction terms.

5. Because exact *months* of first Social Security receipt could be determined using the MBR but exact *dates* could not, we examine individuals in the eleventh month after a birthday. For example, if a person was born in November, we checked to see whether he or she received Social Security benefits by the end of October. (The month of analysis is coded as a parameter in the estimation program, even0908.sas, and can be easily modified.) In order to maximize the number of observations in the analysis, we allowed a person to reach the month before his/her (self-reported) birth month in any month of the survey. This implies that individuals included in the estimation ranged in age from 62 to 67 in the 1989 to 1995 period (and were thus born between 1922 and 1933).

6. Estimates of intercepts were usually slightly higher with the screen. This is sensible, since the overall likelihood of retirement should go up when ineligible individuals are excluded from the risk pool. In later simulations, model users at SSA could adjust the intercepts slightly upward to account for this difference, though our provisions for “mandatory” retirement of eligible individuals at age 67 should prevent any major problems from this slight discrepancy.

7. Because this function helps to predict earnings at age t, these earnings cannot be used in the equations. To capture lagged earnings in the estimation, we used the annual values from the Summary Earnings Record rather than the monthly levels from SIPP. This is problematic in that SER earnings at t-1 represent very different things for individuals who were born in January and December of the same year. For one person in a given birth cohort, t-1 earnings could represent his/her earnings from eleven months in which he/she was 61 and one month in which he/she was 62, while for another person in the same cohort, the same variable would represent earnings from the opposite grouping of months.

8. We used pension *coverage* rather than pension *wealth* or pension *income* because the former can be defined more consistently within MINT. While in theory pension wealth is the most relevant of the three variables, the MINT projections of pension wealth/income apply only to those workers who wait until age 62 before collecting benefits, a restriction we could not easily make in the SIPP estimation data. Further, using an income indicator in the SIPP data would have led us to confound pension take-up and pension wealth, as information about the value of defined benefit pension balances is only available when the person is collecting a pension.

9. While using multivariate equations like these for projection allows one to capture changes in the *composition* of the population into the future, it does not allow one to account for any future changes in the underlying *structure* of a process (in this case, timing of Social Security benefit receipt). Assuming a constant structure is more problematic when a process is changing rapidly for a given group. For married women, the process of Social Security benefit timing has been changing in important ways in recent years. With each succeeding cohort, a smaller fraction of women receives benefits as wives and a greater fraction receives benefits as workers. As a result, the relative weights that the SIPP equation for married women attaches to husbands' and wives' experiences may be less appropriate for future groups of married women.

10. While the equation for married men currently includes two wealth measures, users may wish to omit the wealth measures for this group in future simulations given the coefficients' lack of statistical significance. Table 5-A-2 presents coefficients for married males where these two variables are omitted.

11. For example, using age minus the Normal Retirement Age rather than age as a predictor in the equations simply reduces to age, but with a different scale.

12. We could implement either PIA or expected benefit as a predictor quite readily in re-estimating these equations, since we now have a detailed Social Security benefit calculator written in SAS. Preliminary estimates, however, indicate that the earnings measures now used in MINT may provide a better fit than PIA. (Estimates were not made using expected benefits as a predictor.) This does not, however, imply that some other non-linear earnings measure might have greater explanatory power than the three earnings measures used here. An indicator variable for eligibility as a spousal recipient could also potentially improve the model.

13. There are of course complications, and potential disadvantages, to each of these approaches. While many of the important predictors of benefit receipt are measured monthly in the SIPP, the earnings picture could become more muddled using finer gradations. If one wished to use a person-month rather than person-year specification, one could consider using the SER to capture permanent earnings, and rely on the SIPP for finer detail on earnings in and close to retirement.

14. The *Annual Statistical Supplement* for 1998 has been released, but the definition of the population included in Table 6.A4 changed between the 1997 and 1998 editions of the *Supplement*, rendering the 1998 figures less comparable to the MINT estimates that we present here. We therefore rely on data from the 1997 *Supplement*, which reflect receipt patterns in 1996.

15. Data on newly awarded survivors' benefit include both new Social Security recipients and spousal recipients who change status upon the death of a spouse. While one can fairly safely assume that those receiving benefits before age 62 are new Social Security recipients, it is not possible to distinguish between first-time and other Social Security recipients at higher ages in

these aggregated statistics. We thus expect some double counting of individuals at higher ages in these estimates.

16. MINT users at SSA may wish to change this assumption so that non-disabled individuals will be allowed to collect Social Security for the first time in their year of death. They may do so by changing the greater than or equal to sign in the following phrase in the SAS macro “decidret” in the program projectr.sas to a less than sign:

```
if doby+index >= dody then ssage=.;
```

17. There is a considerable spike in receipt at age 67 among both men and women in the 1926-1930 birth cohorts. We suspect that this may be due to incomplete reporting of receipt of Social Security in the MBR, given that ages of first receipt are derived from the MBR for most members of these cohorts. As these cohorts are not a part of the core sample, we have nor pursued this issue.

18. The thresholds for these quintiles, expressed as a percentage of the average wage, are as follows: 0.19227, 0.49778, 0.83603, and 1.27268.

19. This may be due in part to inaccurate information or mistaken calculations by a household member who answers the questionnaire, rather than by the person that the data record describes.